

## SEARCH REQUEST FORM

## Scientific and Technical Information Center

Requester's Full Name: George Wyszniewski Examiner #: b5419 Date: 8/  
 Art Unit: 142 Phone Number 308-2531 Serial Number: 09/827665  
 Mail Box and Bldg/Room Location: CP3 7346 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

*filtration*  
5,891,212

\*\*\*\*\*  
 No litigation involved  
 \*\*\*\*\*  
 STAFF USE ONLY  
 Searcher: Mellerson  
 Searcher Phone #: 8445-3  
 Searcher Location: CP3/4 3042  
 Date Searcher Picked Up: 8/11  
 Date Completed: 8/11  
 Searcher Prep & Review Time: 2  
 Clerical Prep Time: \_\_\_\_\_  
 Online Time: 2

Type of Search	Vendors and cost where applicable
NA Sequence (#)	STN _____
AA Sequence (#)	Dialog _____
Structure (#)	Questel/Orbit <u>50.15</u>
Bibliographic	Dr.Link _____
Litigation	Lexis/Nexis <u>40.00</u>
Fulltext	Sequence Systems _____
Patent Family	WWW/Internet _____
Other	Other (specify) _____

**Current session 01/08/2002**

(C) QUESTEL 1994

QUESTEL.ORBIT (TM) 1998

Last connection: 01/08/02 14\*38\*21

01/08/02 20\*54\*19

WELCOME to QUESTEL.ORBIT- Your Guide to INTELLECTUAL PROPERTY  
www.questel.orbit.com - Gateway, documentation & IP resource  
- New Family displays w LEGAL option, etc.: INFO NEWS-PLUSPAT  
- PlusPat Family w Legal Status in ONE record - INFO MFAMSTAT  
- Now 9 million Images w PlusPat displays - INFO IMG-PLUSPAT  
- Latest EP, WO & US Applications in One Alert: INFO APPALERT  
- New Trademark file names, format & fields - INFO COMPU-MARK  
- EPAPAT contains all unique EPTEXT data. EPTEXT file removed  
- New Patent Citation Commands: easy & precise - INFO PATCITE  
..FILE / ..INFO / ..GUIDE

**Query/Command : FILE PLUSPAT**

QUESTEL - Time in minutes : 1,13  
The cost estimation below is based on Questel's  
standard price list

Estimated cost : 0.97 USD  
Cost estimated for the last database search : 0.97 USD  
Estimated total session cost : 0.97 USD

Selected file: PLUSPAT

PLUSPAT - (c) Questel-Orbit, All Rights Reserved.  
Comprehensive Worldwide Patents database  
New Patent Citation Commands & FAM Citation Report - see INFO PATCITE  
Last update of file: 2002/07/31 (YYYY/MM/DD) 2002-30/UP (basic update)

Search statement 1

**Query/Command : US5891212/PN****\*\* SS 1: Results 1**

Search statement 2

**Query/Command : PRT FULL NONSTOP LEGALALL**

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*1/1 PLUSPAT - ©QUESTEL-ORBIT - image*

**PN** - US5891212 A 19990406 [US5891212]  
**TI** - (A) Apparatus and method for making uniformly  
**PA** - (A) AEROQUIP CORP (US)  
**IN** - (A) TANG JIE (US); HESS GARY B (US); MUSZYNSKI MARK D (US); GOEHRING THOMAS S (US)  
**AP** - US93129597 19970916 [1997US-0931295]  
**PR** - US93129597 19970916 [1997US-0931295]  
US89214597 19970714 [1997US-0892145]  
**IC** - (A) B06B-001/20  
**EC** - B01J-002/02  
B01J-002/04  
B01J-002/18  
B22F-001/00A2S  
B22F-009/08  
C21D-009/00P  
**ICO** - L22F-998/00 L22F-203:01  
**PCL** - ORIGINAL (O) : 075335000; CROSS-REFERENCE (X) : 075345000 264009000  
**DT** - Corresponding document  
**CT** - US3986899; US4216178; US4302166; US4419303; US4628040; US4744821; US4787935; US4956128; US4981625; US5032172; US5147448; US5171360; US5226948; US5266098; US5411602; US5520715; US5560543; US5609919; US5746844; EP0467221; FR2595595; JP6-91204; SU1682039; WO9811588 P  
Christian Henry Passow, A Study of Spray Forming Using Uniform Droplet Sprays, 1992, Thesis presented to the Department of Mechanical Engineering at MIT on May 5, 1992.  
**STG** - (A) United States patent  
**AB** - Uniform sized and shaped spheres are formed by applying a minute periodic disturbance to a low viscosity liquid material. Pressure forces the material through at least one orifice in a crucible as a steady laminar stream. The stream enters an enclosed controlled temperature solidification environment which contains at least one heat transfer medium. A charging means is applied to the stream as the stream exits the crucible and breaks into a plurality of spheres to deflect the spheres as they pass through an electric field. The enclosed controlled temperature solidification environment cools and substantially solidifies the spheres.

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*1/1 LGST - ©LEGSTAT*

**PN** - US 5891212 [US5891212]  
**AP** - US 931295/97 19970916 [1997US-0931295]  
**DT** - US-P  
**ACT** - 19970916 US/AE-A  
APPLICATION DATA (PATENT)  
US 931295/97 19970916 [1997US-0931295]  
  
19970916 US/AS02  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
AEROQUIP CORPORATION 3000 STRAYER ROAD MAUMEE, OHIO 43537 \*  
TANG, JIE : 19970912; HESS, GARY B. : 19970912; MUSZYNSKI, MARK D. :  
19970912; GOEHRING, THOMAS S. : 19970912  
  
19990406 US/A  
PATENT  
  
19990907 US/CC  
CERTIFICATE OF CORRECTION  
  
20020521 US/RF  
REISSUE APPLICATION FILED  
20010406  
**UP** - 2002-22

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*1/1 CRXX - ©CLAIMS/RRX*

**PN** - 5,891,212 A 19990406 [US5891212]  
**PA** - Aeroquip Corp  
**ACT** - 20001030 REASSIGNED  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
  
Assignor: EATON AEROQUIP INC. DATE SIGNED: 09/29/2000  
  
Assignee: FRY'S METALS, INC. D/B/A COOKSON SEMICONDUCTOR  
PACKAGING MATERIALS SUITE 150 225 FOXBOROUGH BOULEVARD  
FOXBOROUGH, MASSACHUSETTS 02035  
  
Reel 011231/Frame 0001  
  
Contact: MINTZ, LEVIN ET AL. CAROL H. PETERS ONE FINANCIAL CENTER  
BOSTON, MA 02111

20010406 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 20020521  
REISSUE REQUEST NUMBER: 09/827605  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 1742

Reissue Patent Number:

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*1 / 2 PAST - ©Thomson Derwent*

**AN** - 200221-002004  
**PN** - 5891212 A [US5891212]  
**OG** - 2002-05-21  
**ACT** - REISSUE APPLICATION FILED

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*2 / 2 PAST - ©Thomson Derwent*

**AN** - 199936-000196  
**PN** - 5891212 A [US5891212]  
**OG** - 1999-09-07  
**ACT** - CERTIFICATE OF CORRECTION

**Query/Command : FILE INPADOC**

PLUSPAT - Time in minutes : 2,05  
The cost estimation below is based on Questel's  
standard price list

Records displayed and billed	:	1	Estimated cost :	4.51 USD
Cost estimated for the last database search	:		Estimated cost :	1.10 USD
Estimated total session cost	:		Estimated cost :	5.61 USD
			Estimated cost :	6.58 USD

LGST - Time in minutes : 0,13  
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standard price list

Records displayed and billed	:	1	Estimated cost :	0.14 USD
Legal-Status informations	:	1	Estimated cost :	0.57 USD
Cost estimated for the last database search	:		Estimated cost :	4.92 USD
Estimated total session cost	:		Estimated cost :	5.63 USD
			Estimated cost :	12.21 USD

CRXX - Time in minutes : 0,03  
The cost estimation below is based on Questel's  
standard price list

Records displayed and billed	:	1	Estimated cost :	0.04 USD
Legal-Status informations	:	1	Estimated cost :	5.00 USD
Cost estimated for the last database search	:		Estimated cost :	4.92 USD
Estimated total session cost	:		Estimated cost :	9.96 USD
			Estimated cost :	22.17 USD

PAST - Time in minutes : 0,11  
The cost estimation below is based on Questel's  
standard price list

Records displayed and billed	:	2	Estimated cost :	0.21 USD
Legal-Status informations	:	1	Estimated cost :	11.22 USD
Cost estimated for the last database search	:		Estimated cost :	4.92 USD
Estimated total session cost	:		Estimated cost :	16.35 USD
			Estimated cost :	38.52 USD

LITA - Time in minutes : 0,07  
The cost estimation below is based on Questel's  
standard price list  
Estimated cost : 0.13 USD  
Cost estimated for the last database search : 0.13 USD  
Estimated total session cost : 38.65 USD

Selected file: INPADOC

You are now connected to INPADOC  
Covers 1968/1973 thru weekly updates (2002-28)  
For information on content, ..INFO INPD.

Search statement 1

**Query/Command : FAM US5891212/PN**

1 Patent Groups

**\*\* SS 1: Results 6**

Search statement 2

**Query/Command : FAMSTATE NONSTOP**

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1/6 INPADOC - ©INPADOC

**PN** - CN 1262636 T 20000809 [CN1262636]  
**TI** - APPARATUS AND METHOD FOR MAKING UNIFORMLY SIZED AND SHAPED SPHERES  
**IN** - TANG J [US]; HESS G B [US]; MUSZYNSKI M D [US]  
**PA** - AEROQUIP CORP [US]  
**AP** - CN 98807037/98-A 19980605 [1998CN-0807037]  
**PR** - US 892145/97-A 19970714 [1997US-0892145]  
US 931295/97-A 19970916 [1997US-0931295]  
**IC** - B22F-009/08; B01J-002/18

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**2/6 INPADOC - ©INPADOC**

**PN** - EP 996521 A1 20000503 [EP-996521]  
**TI** - APPARATUS AND METHOD FOR MAKING UNIFORMLY SIZED AND SHAPED SPHERES  
**LA** - ENG  
**IN** - TANG JIE [US]; HESS GARY B [US]; MUSZYNSKI MARK D [US]; GOEHRING THOMAS S [US]  
**PA** - AEROQUIP CORP [US]  
**AP** - EP 98925258/98-A 19980605 [1998EP-0925258]  
**PR** - WO 9811588/98(US)-W 19980605 [1998WO-US11588]  
US 892145/97-A 19970714 [1997US-0892145]  
US 931295/97-A 19970916 [1997US-0931295]  
**IC** - B22F-009/08; B01J-002/18  
**DS** - AT\* BE\* CH\* CY\* DE\* DK\* ES\* FI\* FR\* GB\* IE\* IT\* LI\* NL\* SE\*

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**1/1 LEGALI - ©LEGSTAT**

**PN** - EP 996521 [EP-996521]  
**AP** - EP 98925258/98 19980605 [1998EP-0925258]  
**DT** - EP-P  
**ACTE** - 19980605 EP/AE-A  
EP-APPLICATION  
EP 98925258/98 19980605 [1998EP-0925258]  
  
20000503 EP/AK-A1 [+]  
DESIGNATED CONTRACTING STATES IN AN APPLICATION WITH SEARCH REPORT:  
AT BE CH CY DE DK ES FI FR GB IE IT LI NL SE  
  
20000503 EP/A1 [+]  
PUBLICATION OF APPLICATION WITH SEARCH REPORT  
  
20000503 EP/17P [+]  
REQUEST FOR EXAMINATION FILED  
19991217  
  
20000830 EP/RIN1  
INVENTOR (CORRECTION)  
TANG, JIE \* HESS, GARY, B. \* MUSZYNSKI, MARK, D. \* GOEHRING, THOMAS, S.  
  
20020522 EP/17Q [+]  
FIRST EXAMINATION REPORT  
20020410  
**UP** - 2002-21

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**3 / 6 INPADOC - ©INPADOC**

**PN** - JP 2002509580 T2 20020326 [JP2002509580]  
**AP** - JP 507149/99-A 19980605 [1999JP-0507149]  
**PR** - US 892145/97-A 19970714 [1997US-0892145]  
          US 931295/97-A 19970916 [1997US-0931295]  
          WO 9811588/98(US)-W 19980605 [1998WO-US11588]  
**IC** - B22F-009/08; B01J-002/02; B01J-002/18

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**4 / 6 INPADOC - ©INPADOC**

**PN** - US 6083454 A 20000704 [US6083454]  
**TI** - APPARATUS AND METHOD FOR MAKING UNIFORMLY SIZED AND SHAPED SPHERES  
**IN** - TANG JIE [US]; HESS GARY B [US]; MUSZYNSKI MARK D [US]; GOEHRING THOMAS S [US]  
**PA** - AEROQUIP CORP [US]  
**AP** - US 212555/98-A 19981216 [1998US-0212555]  
**PR** - US 212555/98-A 19981216 [1998US-0212555]  
          US 931295/97-A3 19970916 [1997US-0931295]  
          US 892145/97-B2 19970714 [1997US-0892145]  
**IC** - G21C-001/00

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**1 / 1 LEGALI - ©LEGSTAT**

**PN** - US 6083454 [US6083454]  
**AP** - US 212555/98 19981216 [1998US-0212555]  
**DT** - US-P  
**ACTE** - 19981216 US/AE-A  
          APPLICATION DATA (PATENT)  
          US 212555/98 19981216 [1998US-0212555]  
  
          20000704 US/A  
          PATENT  
**UP** - 2000-31

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*5 / 6 INPADOC - ©INPADOC*

**PN** - US 5891212 A 19990406 [US5891212]  
**TI** - APPARATUS AND METHOD FOR MAKING UNIFORMLY  
**IN** - TANG JIE [US]; HESS GARY B [US]; MUSZYNSKI MARK D [US]; GOEHRING  
THOMAS S [US]  
**PA** - AEROQUIP CORP [US]  
**AP** - US 931295/97-A 19970916 [1997US-0931295]  
**PR** - US 931295/97-A 19970916 [1997US-0931295]  
US 892145/97-B2 19970714 [1997US-0892145]  
**IC** - B06B-001/20

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*1 / 1 LEGALI - ©LEGSTAT*

**PN** - US 5891212 [US5891212]  
**AP** - US 931295/97 19970916 [1997US-0931295]  
**DT** - US-P  
**ACTE** - 19970916 US/AE-A  
APPLICATION DATA (PATENT)  
US 931295/97 19970916 [1997US-0931295]  
  
19970916 US/AS02  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
AEROQUIP CORPORATION 3000 STRAYER ROAD MAUMEE, OHIO 43537 \*  
TANG, JIE : 19970912; HESS, GARY B. : 19970912; MUSZYNSKI, MARK D. :  
19970912; GOEHRING, THOMAS S. : 19970912

19990406 US/A  
PATENT

19990907 US/CC  
CERTIFICATE OF CORRECTION

20020521 US/RF  
REISSUE APPLICATION FILED  
20010406

**UP** - 2002-22

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**6/6 INPADOC - ©INPADOC**

**PN** - WO 9903626 A1 19990128 [WO9903626]  
**TI** - APPARATUS AND METHOD FOR MAKING UNIFORMLY SIZED AND SHAPED SPHERES  
**LA** - ENG  
**IN** - TANG JIE; HESS GARY B; MUSZYNSKI MARK D; GOEHRING THOMAS S  
**PA** - AEROQUIP CORP [US]  
**AP** - WO US 9811588/98(US)-A 19980605 [1998WO-US11588]  
**PR** - US 892145/97-A 19970714 [1997US-0892145]  
US 931295/97-A 19970916 [1997US-0931295]  
**IC** - B22F-009/08; B01J-002/18  
**DS** - CN\* JP\* KR\* SG\* AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

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**1/2 LEGALI - ©LEGSTAT**

**PN** - KR 2000700390 [KR2000700390]  
**AP** - KR 2000700390 - [2000KR-0700390]  
**DT** - KR-A  
**ACTE** - 20000113 KR/REFW-P  
CORRESPONDS TO PCT APPLICATION  
<WO 9903626> [WO9903626]  
**UP** - 2001-39

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**2/2 LEGALI - ©LEGSTAT**

**PN** - WO 9903626 [WO9903626]

**AP** - WO 9811588/98(US) 19980605 [1998WO-US11588]

**DT** - WO-P

**ACTE** - 19980605 WO/AE-A  
APPLICATION DATA  
WO 9811588/98(US) 19980605 [1998WO-US11588]

19990128 WO/AK-A1 [+]

DESIGNATED STATES CITED IN A PUBLISHED APPLICATION WITH SEARCH  
REPORT

CN JP KR SG

19990128 WO/AL-A1 [+]

DESIGNATED COUNTRIES FOR REGIONAL PATENTS CITED IN A PUBLISHED  
APPLICATION WITH SEARCH REPORT

AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

19990128 WO/A1 [+]

PUBLICATION OF THE INTERNATIONAL APPLICATION WITH THE  
INTERNATIONAL SEARCH REPORT

19990512 WO/121

EP: THE EPO HAS BEEN INFORMED BY WIPO THAT EP WAS DESIGNATED IN  
THIS APPLICATION

19990701 WO/DFPE

REQUEST FOR PRELIMINARY EXAMINATION FILED PRIOR TO EXPIRATION  
OF 19TH MONTH FROM PRIORITY DATE

20000113 WO/ENP-A

ENTRY INTO THE NATIONAL PHASE IN:

<KR 002000700390>

**UP** - 2001-39

PATNO IS 5891212

DATE: AUGUST 1, 2002  
LIBRARY: PATENT  
FILE: ALL

Your search request is:  
PATNO IS 5891212

Number of PATENTS found with your search request through:  
LEVEL 1... 1

Your search request has found 1 PATENT through Level 1.  
To DISPLAY this PATENT press either the KWIC, FULL, CITE or SEGMENTS key.  
To MODIFY your search request, press the M key (for MODFY) and then the ENTER key.

For further explanation, press the H key (for HELP) and then the ENTER key.

LEVEL 1 - 1 PATENT

1. 5891212 , April 6, 1999 , Apparatus and method for making uniformly , Tang, Jie, Ann Arbor, MI; Hess, Gary B., Onsted, MI; Muszynski, Mark D., Manchester, MI; Goehring, Thomas S., Jackson, MI, 08931295, Aeroquip Corporation, Maumee, OH

CORE TERMS: sphere, droplet, solidification, crucible, heat, stream, stimulation, medium, charging, actuator ...

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

5891212

<=1> GET 1st DRAWING SHEET OF 3

April 6, 1999

Apparatus and method for making uniformly

REISSUE: April 6, 2001 - Reissue Application filed Ex. Gp.: 1742; Re. S.N.  
09/827,605 May 21, 2002

APPL-NO: 08931295

FILED-DATE: September 16, 1997

GRANTED-DATE: April 6, 1999

CORE TERMS: sphere, droplet, solidification, crucible, heat, stream,  
stimulation, medium, charging, actuator ...

ENGLISH-ABST:

Uniform sized and shaped spheres are formed by applying a minute periodic disturbance to a low viscosity liquid material. Pressure forces the material through at least one orifice in a crucible as a steady laminar stream. The stream enters an enclosed controlled temperature solidification environment which contains at least one heat transfer medium. A charging means is applied to the stream as the stream exits the crucible and breaks into a plurality of spheres to deflect the spheres as they pass through an electric field. The enclosed controlled temperature solidification environment cools and substantially solidifies the spheres.

5891212 OR 5,891.212

Your search request has found no CASES.

To edit the above request, use the arrow keys. Be sure to move the cursor to the end of the request before you enter it.

To enter a new search request, type it and press the ENTER key.

What you enter will be Search Level 1.

For further explanation, press the H key (for HELP) and then the ENTER key.